

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

2 SEP 2006

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|---|---|---|
| Applicant's or agent's file reference FP22184 | FOR FURTHER ACTION See Form PCT/IPEA/416 | |
| International application No. PCT/AU2005/001226 | International filing date (<i>day/month/year</i>) 16 August 2005 | Priority date (<i>day/month/year</i>) 16 August 2004 |
| International Patent Classification (IPC) or national classification and IPC Int. Cl. E06C 7/44 (2006.01) A47B 9/10 (2006.01) A47B 9/20 (2006.01) | | |
| Applicant FLAT PTY LTD et al | | |

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 3 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
 - ☒ (*sent to the applicant and to the International Bureau*) a total of 24 sheets, as follows:
 - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - ☐ (*sent to the International Bureau only*) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or table related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

- This report contains indications relating to the following items:

- | | |
|---|---|
| <input checked="" type="checkbox"/> Box No. I | Basis of the report |
| <input type="checkbox"/> Box No. II | Priority |
| <input type="checkbox"/> Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> Box No. VI | Certain documents cited |
| <input type="checkbox"/> Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> Box No. VIII | Certain observations on the international application |

| | |
|---|--|
| Date of submission of the demand 12 January 2006 | Date of completion of this report 5 September 2006 |
| Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929 | Authorized Officer E.J. MARTYN Telephone No. (02) 6283 2332 |

Box No. I Basis of the report

1. With regard to the **language**, this report is based on:

- ☒ The international application in the language in which it was filed
- ☐ A translation of the international application into _____, which is the language of a
- ☐ international search (under Rules 12.3(a) and 23.1 (b))
- ☐ publication of the international application (under Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ the international application as originally filed/furnished
- ☒ the description:

pages **1 - 9, 11, 12, 14 - 16, 20 - 33** as originally filed/furnishedpages* **10, 13, 17, 18** received by this Authority on **12 January 2006** with the letter of **11 January**

2006

pages* **19** received by this Authority on **15 August 2006** with the letter of **15 August 2006**

- ☒ the claims:

pages **34 - 46** as originally filed/furnished

pages* as amended (together with any statement) under Article 19

pages* received by this Authority on _____ with the letter of _____

pages* received by this Authority on _____ with the letter of _____

- ☒ the drawings:

pages as originally filed/furnished

pages* **1 - 19** received by this Authority on **12 January 2006** with the letter of **11 January 2006**

pages* received by this Authority on _____ with the letter of _____

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|---------------|-----|
| Novelty (N) | Claims 1 - 46 | YES |
| | Claims | NO |
| Inventive step (IS) | Claims 1 - 46 | YES |
| | Claims | NO |
| Industrial applicability (IA) | Claims 1 - 46 | YES |
| | Claims | NO |

2. Citations and explanations (Rule 70.7)

Claims 1 - 46

The invention of the claims is a support for supporting a structure on a surface, the support comprising at least one support element, the or each element comprising a piston, a cylinder and a breaking means.

No individual citation or obvious combination of citations disclose a breaking means associated with a piston and cylinder and being activated by "an increase in hydraulic pressure within the cylinder, effected by the loading associated with the structure".

The closest art is DE 4119762.

Therefore the subject matter of these claims is new and not obvious and meets the requirements of Article 33(2) and 33(3) of the PCT with regard to novelty and inventive step.

Industrial Applicability (IA)

The invention defined in the claims is considered to meet the requirements of Industrial Applicability under Article 33(4) of the PCT because it can be made by, or used in, industry.

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yet another embodiment of the present invention,

Figure 6 shows a perspective view of a representation of a support for a structure according to an embodiment of the present invention,

5 Figure 7 shows a front perspective view of a representation of the support for a structure of Figure 6,

Figure 8 and 9 show a schematic representation of a support for a structure according to an embodiment of the present invention,

10 Figure 10 shows a schematic representation of the support for a structure of Figures 10A and 10B in use,

Figure 11 shows a schematic representation of a support element for supporting a structure according to an embodiment of the present invention,

15 Figure 12 shows a schematic representation of the support element for supporting a structure of Figure 11,

Figure 13 shows a schematic representation of the support element for supporting a structure of Figure 11,

20 Figure 14 shows a schematic representation of the support element for supporting a structure of Figure 11,

Figure 15 shows a schematic representation of a support element for supporting a structure according to an embodiment of the present invention,

25 Figures 16 shows a schematic representation of a support element for supporting a structure according to an embodiment of the present invention,

Figure 17 shows a schematic representation of a support element for supporting a structure according to an embodiment of the present invention,

30 Figure 18 shows a schematic representation of a ball valve of the support element for supporting a structure of Figure 17,

Figure 19 shows a schematic representation of a

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valve 25 is limited or prevented. In contrast when the fluid pressure on one side of the valve 25 is below the threshold value, the valve 25 is adapted to allow fluid transfer. When fluid transfer occurs, the pressure on both
5 sides of the valve 25 falls to below the preset limit and the interconnected valves 25 of each support element 12, 14 will open to allow fluid transfer.

This allows the support element 30 to self-adjust upon a change in loading. That is when any one leg is
10 unloaded leg height adjustment is allowed by the opening of the valves 25 and flow of fluid through the tube 24.

Figure 1B shows a variation of the embodiment shown in Figure 1A. In this case the structure that is supported by the support 10 is a table 28.

15 Figure 2 shows detail of a support element 30 for supporting a structure, such as support elements 12 or 14 shown in Figures 1A and 1B. The support element 30 comprises a cylinder 32 in which a piston 34 is guided. The cylinder 32 has a fluid inlet/outlet opening 36 for
20 receiving and ejecting fluid 38, such as a hydraulic liquid or water. The piston 34 has a seal 35 for sealing the fluid 38 in the cylinder 32. The fluid inlet/outlet 36 is connected to another such fluid inlet/outlet of another support element (not shown).

25 In the embodiment shown in Figure 2, the piston 34 includes a cavity 40 having openings 42 and 44 at the side portions of the piston 34. In the openings 42 and 44 brake cylinders 46 and 48 are guided and if the fluid pressure in the cylinder 32 is above a threshold level, the brake
30 cylinders 46 and 48 are pushed against the interior wall of the cylinder 32 so as to position the piston 34 in a stationary position relative the cylinder 32. The cylinder 32 also has a thread 33 for mounting on a structure. This

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portion comprises two parts 120 a and 120 b. When the support element 110 is in an adjusted position after movement of the piston 114 relative to the cylinder 112, the surface contact portion 120 contacts the surface and the movement of the surface contact portion therefore is restricted. The weight of the structure effects a further movement of the piston 114 in a downward direction against the surface contact portion 120 and the wedge portions 122 move parts 120 A and 120b apart from one another and towards the interior wall of the cylinder 112. In this embodiment, the lower part of the interior wall of the cylinder 112 has at least one tooth 128 on the surface and the parts 120 A and 120 B have toothed surfaces 130. When the parts 120 A and 120 B are moved towards the interior side wall of the cylinder 112, the teeth 128 engage with the toothed surface 130 and the engagement inhibits further movement of the piston 118 and the surface contact portion 120.

Figures 6-9 show two support elements 140 and 140' in use in a table 141. The support elements 140 and 140' comprise a cylinder 132 and 132' in which a piston 134 and 134' is guided. The cylinders 132 and 132' have a fluid inlet/outlet opening 136 and 136'. The fluid inlet/outlet openings 136 and 136' are in fluid communication with one another. In this embodiment the support elements 140 and 140' comprise a piston extension 144 and 144' which is positioned below the pistons 134 and 134' and attached thereto. The piston extensions 144 and 144' are guided in telescopic cylinders 142 and 142'.

In use the table 141 is placed on an uneven surface and the support elements 140 and 140' typically adjust for the uneven surface. The fluid 138 will flow between the cylinders 132 and 132' until the loading associated with

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the structure acts to increase the fluid pressure within the cylinders 132 and 132' above a threshold pressure and the braking means 135 act to retain the piston 134 and 134' in a stationary position relative to the cylinder 132 and 132'. Consequently, the table 141 will then have a stable position.

Figure 10 shows a support element 150 for supporting a structure according to a yet another embodiment of the invention. Again, the support element 150 may function as support element 12 or 14 in the embodiment shown in Figures 1A and 1B and described above. The support element 150 comprises a cylinder 152 in which a piston 154 is guided. The piston 154 includes a seal 155 which stops the fluid 158 from escaping the cylinder 152. The cylinder 152 has a fluid inlet/outlet opening 156. The fluid inlet/outlet opening 156 is in fluid communication with another such fluid inlet/outlet opening 156'. In this embodiment the support element 150 comprises a piston extension 160 which is positioned below the piston 154 and attached thereto. The piston extension 160 is guided in telescopic cylinder 162. This piston extension 160 and telescopic cylinder 162 combination protects the piston 154 and cylinder 152 assembly of support element 150. It can be seen that in use the transverse load on the piston 154 and cylinder 152 assembly is limited by the protective piston extension 160 and telescopic cylinder 162 combination.

In use the piston extension 160 and telescopic cylinder 162 allow the support element 150 to be composed of lighter-weight materials with less strength than would be required without the piston extension 160 and telescopic cylinder 162.

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Figures 11-14 show a support element 170 for supporting a structure in more detail. The support element 170 comprises a cylinder 172 in which a piston 174 is guided. The cylinder 172 has a fluid inlet/outlet opening 176 for receiving and ejecting fluid 178, such as a hydraulic liquid or water. The fluid 178 is contained in a bladder 179. The fluid inlet/outlet 176 is connected to another such fluid inlet/outlet of another support element (not shown). In this embodiment the piston 174 has a cavity 180 having openings 182 and 184 at the side portions of the piston 184. Cavity 180 contains fluid 181, such as hydraulic fluid or water. In the openings 182 and 184 brake cylinders 186 and 188 are guided and if the fluid pressure in the cylinder 172 is above a threshold level, the brake cylinders 186 and 188 are pushed against the interior wall of the cylinder 172 so as to position the piston 174 in a stationary position relative the cylinder 172. The cavity 180 further includes seals 189 for retaining fluid 181 within the cavity 180. The cylinder 172 also has a thread 173 for mounting on a structure. In the embodiment shown in figure 14 the cavity fluid 181 is maintained in a bladder 183.

Further, in the embodiment shown in figures 11-14 a piston plate 194 is positioned between the fluid 178 in the cylinder 172 and the piston 174. The piston plate 194 includes a piston plate guide 195 which extends into the cavity 180. Seals 197 are positioned to retain fluid 181 in cavity 180.

If the fluid pressure in the cylinder 172 is above a threshold level the pressure is transferred through the

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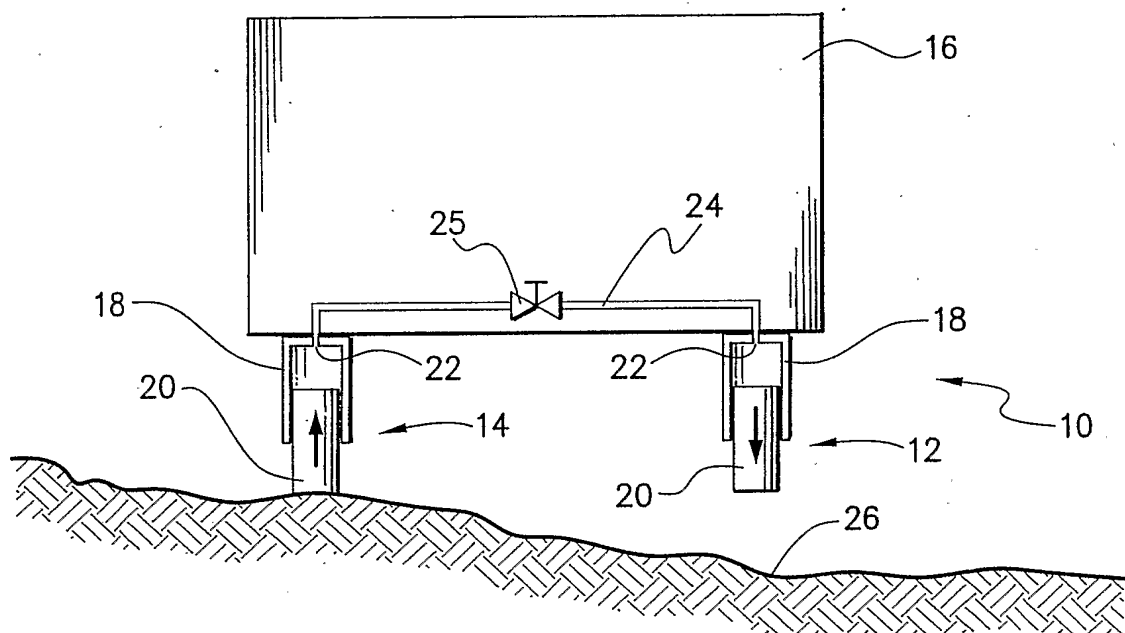


Fig. 1A

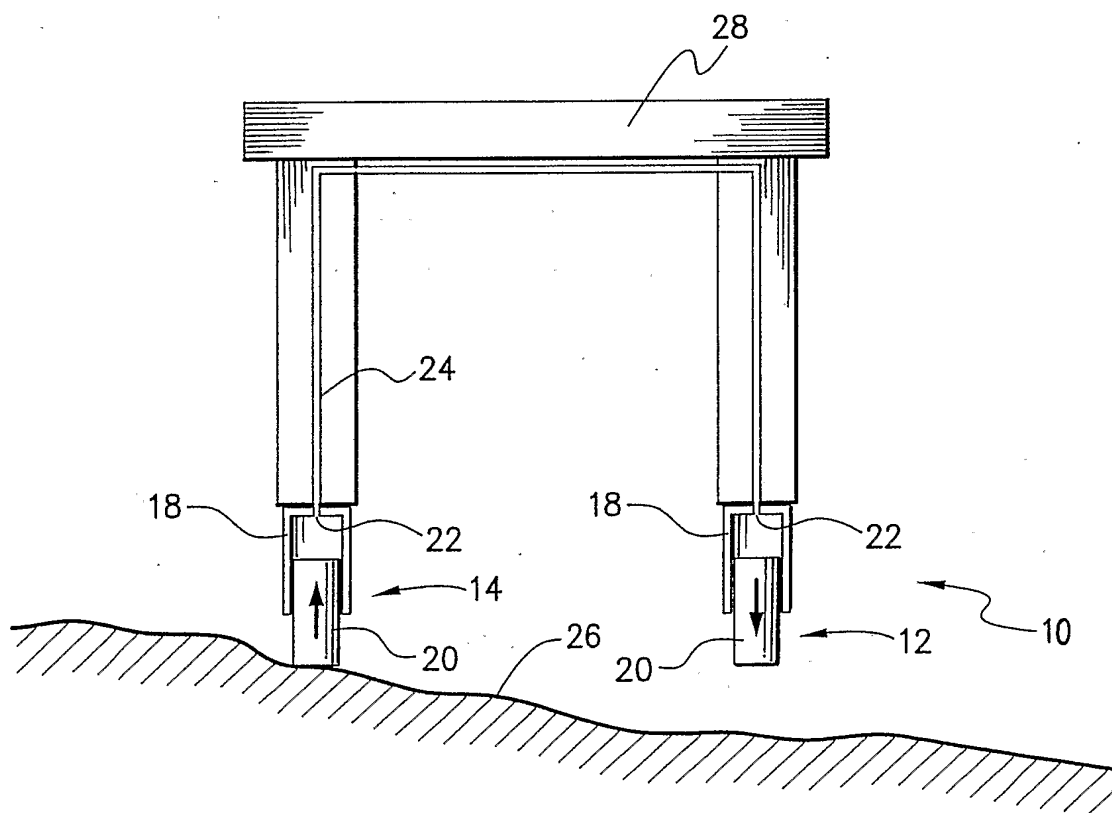


Fig. 1B

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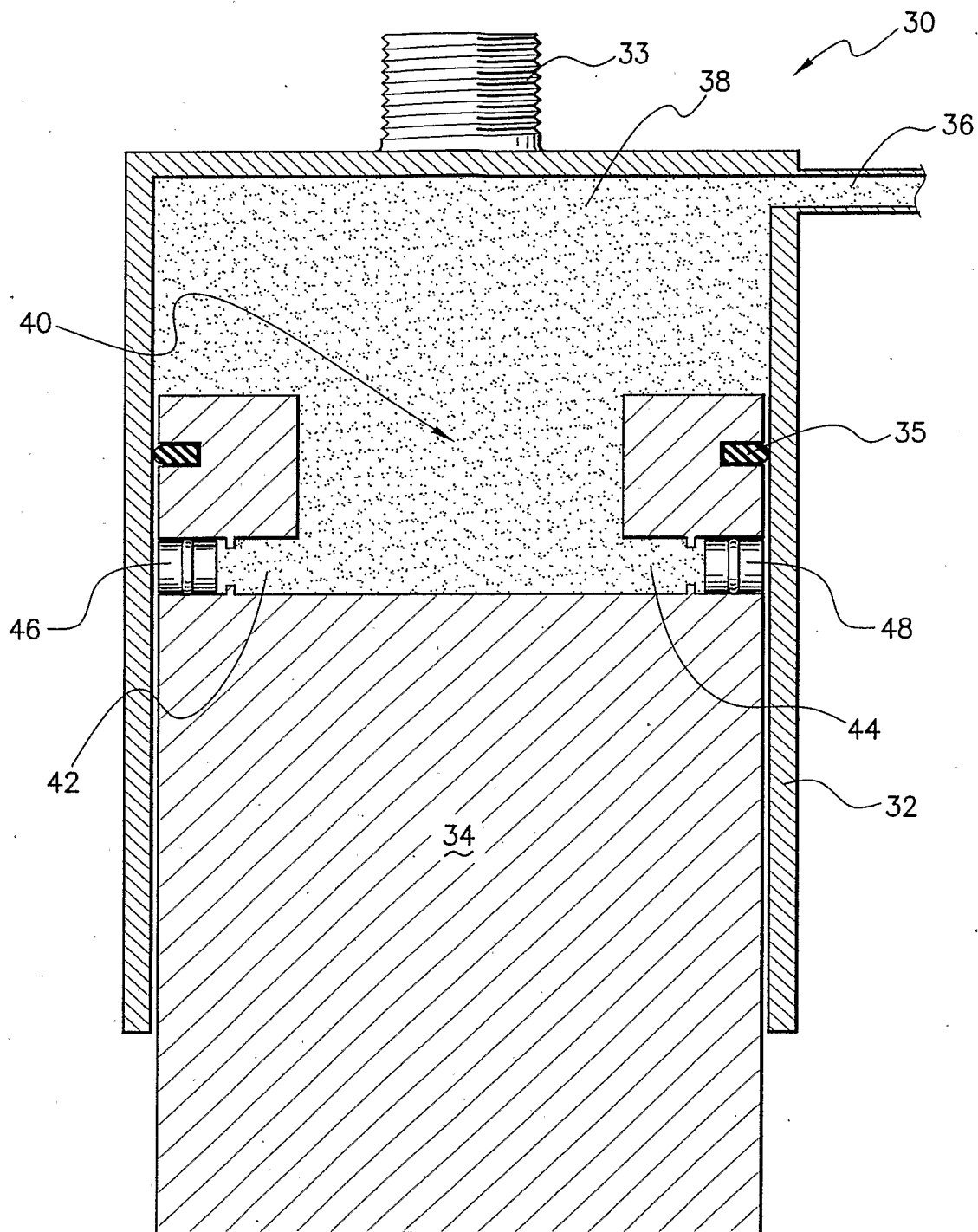


Fig. 2

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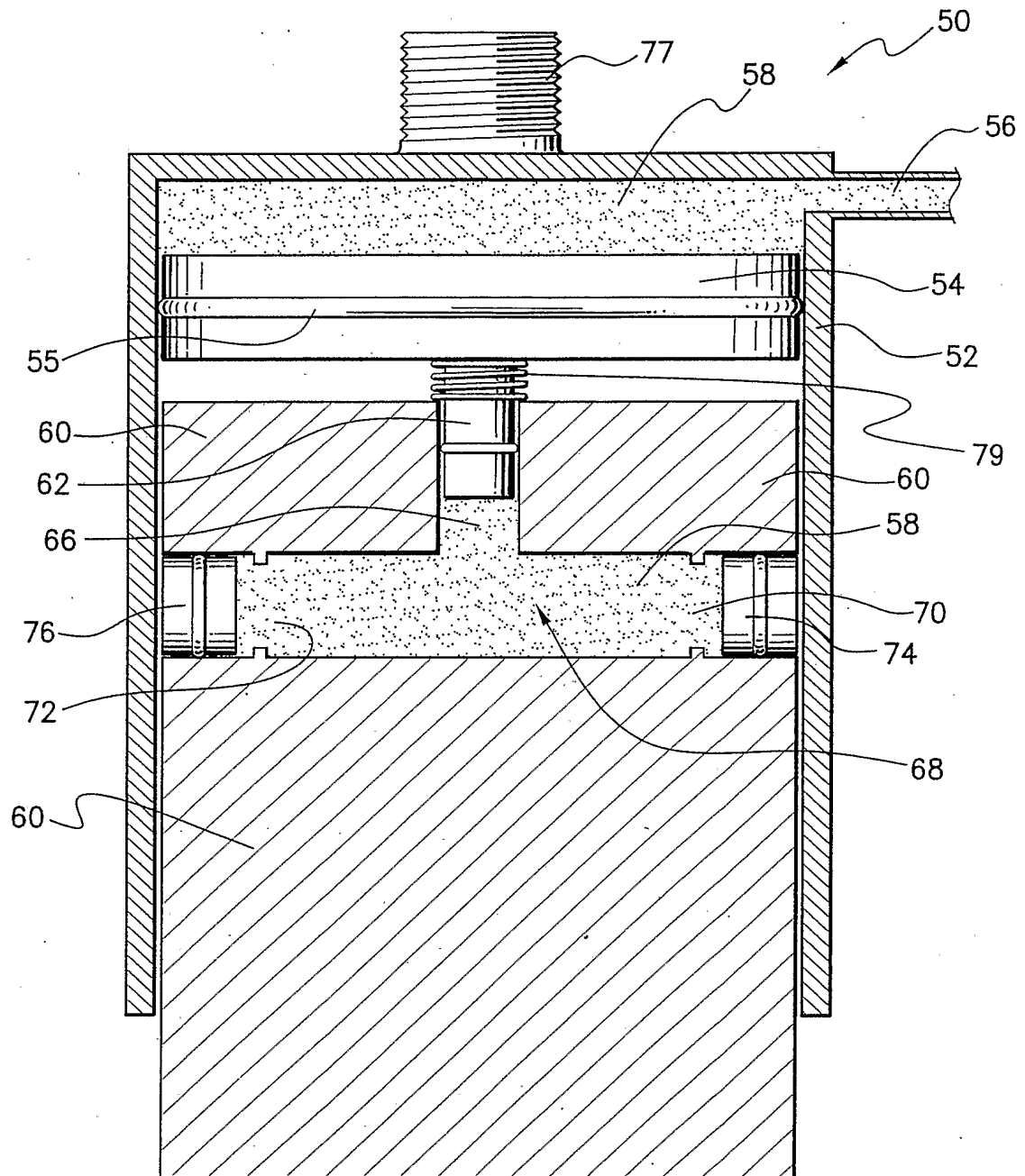


Fig. 3

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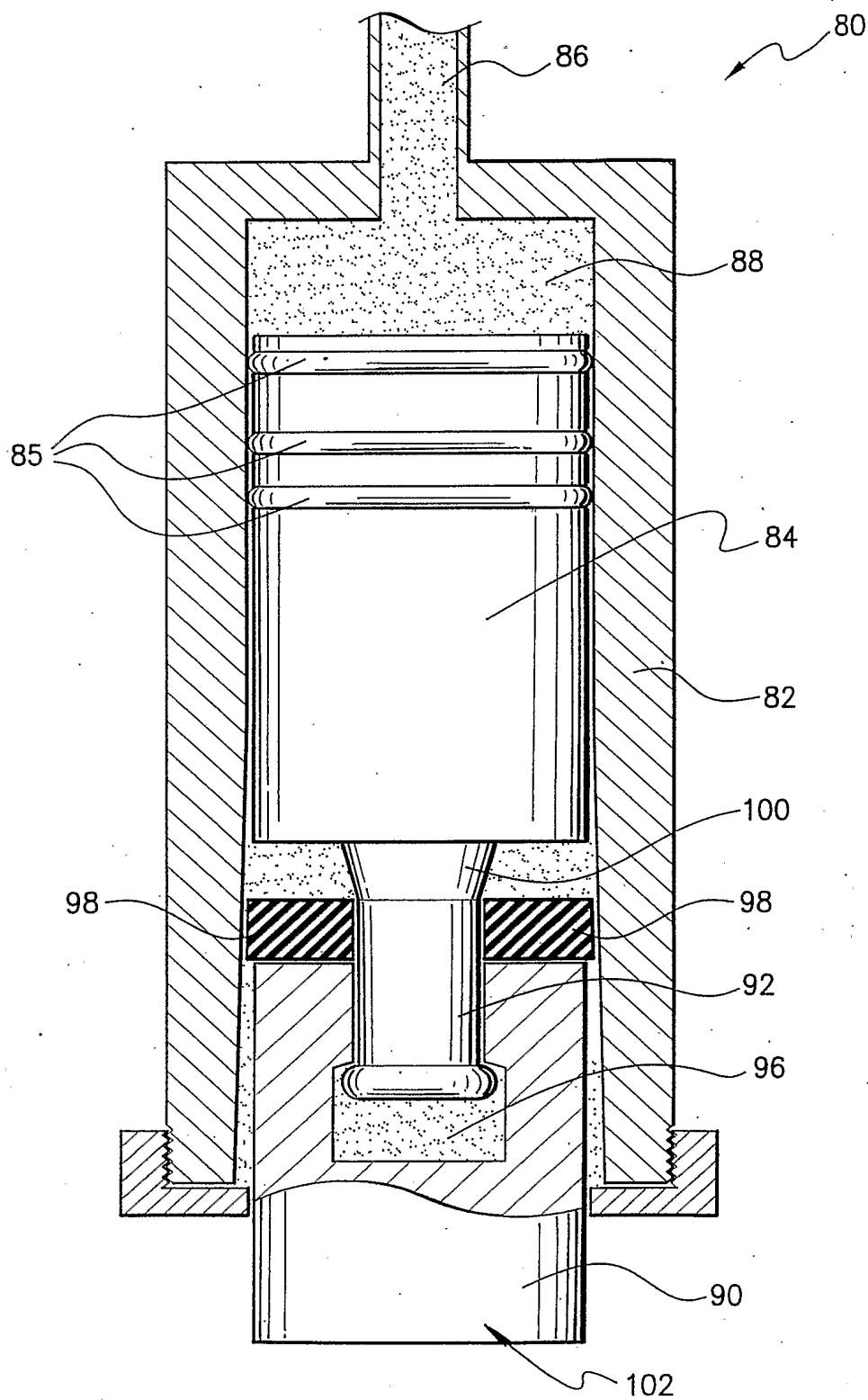


Fig. 4

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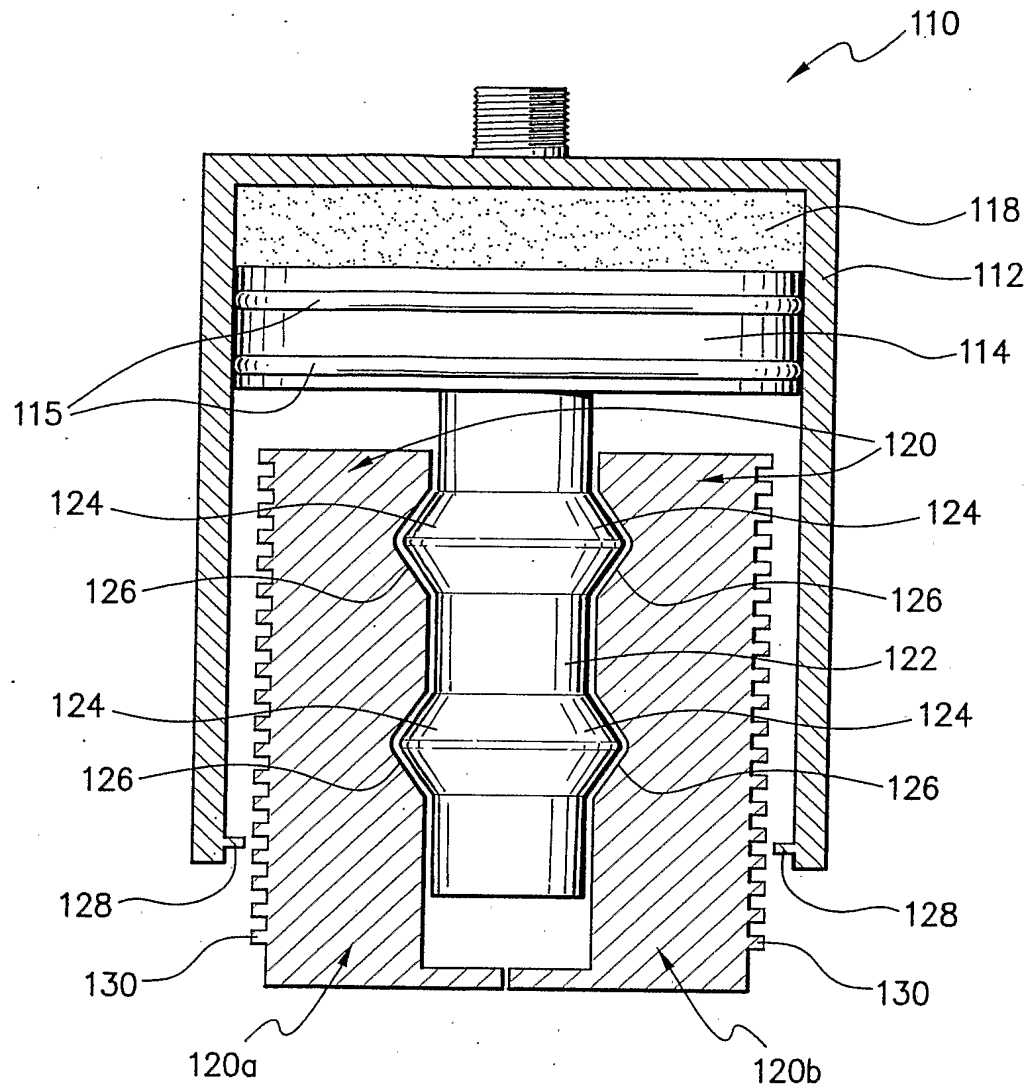


Fig. 5

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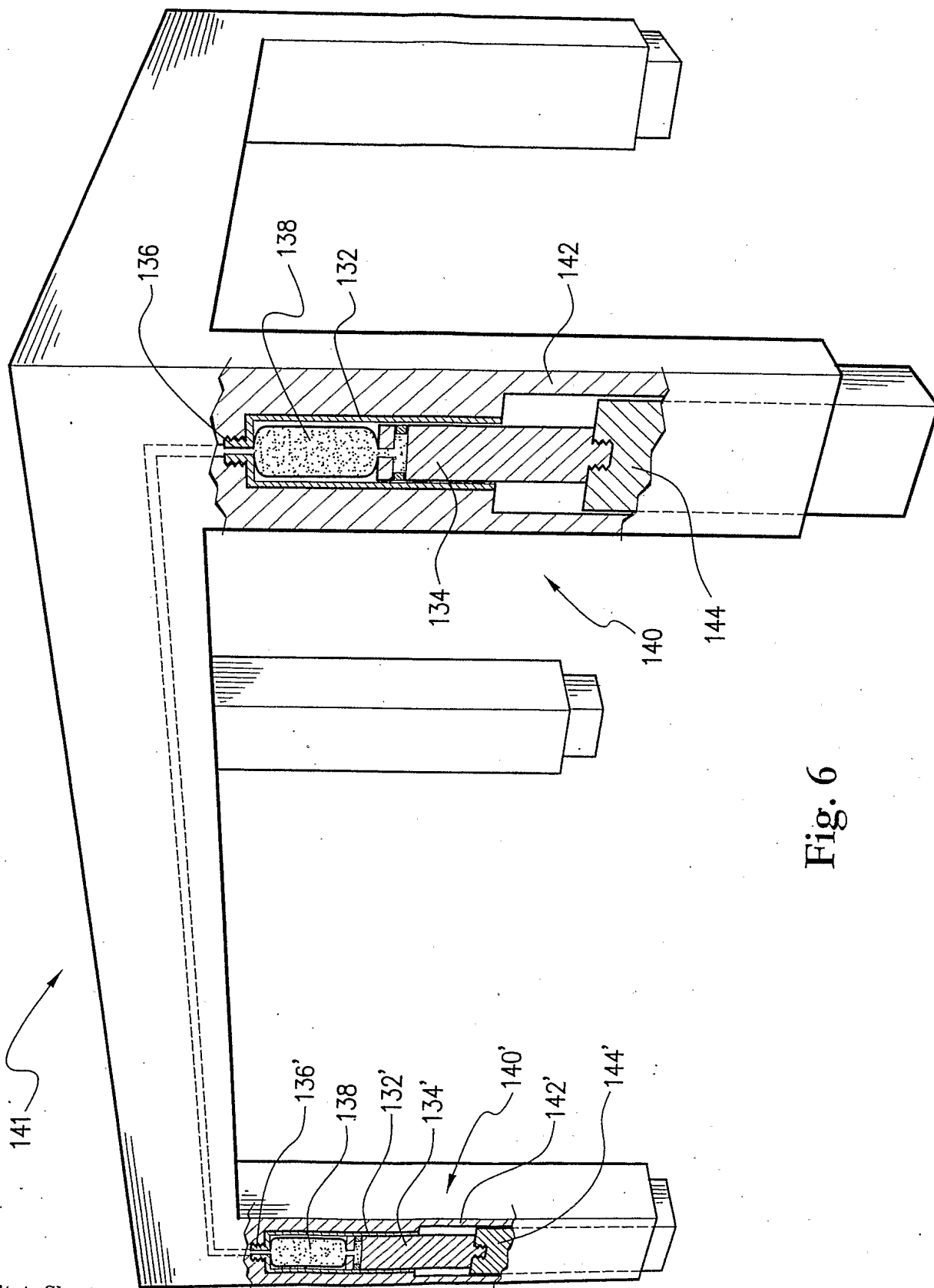


Fig. 6

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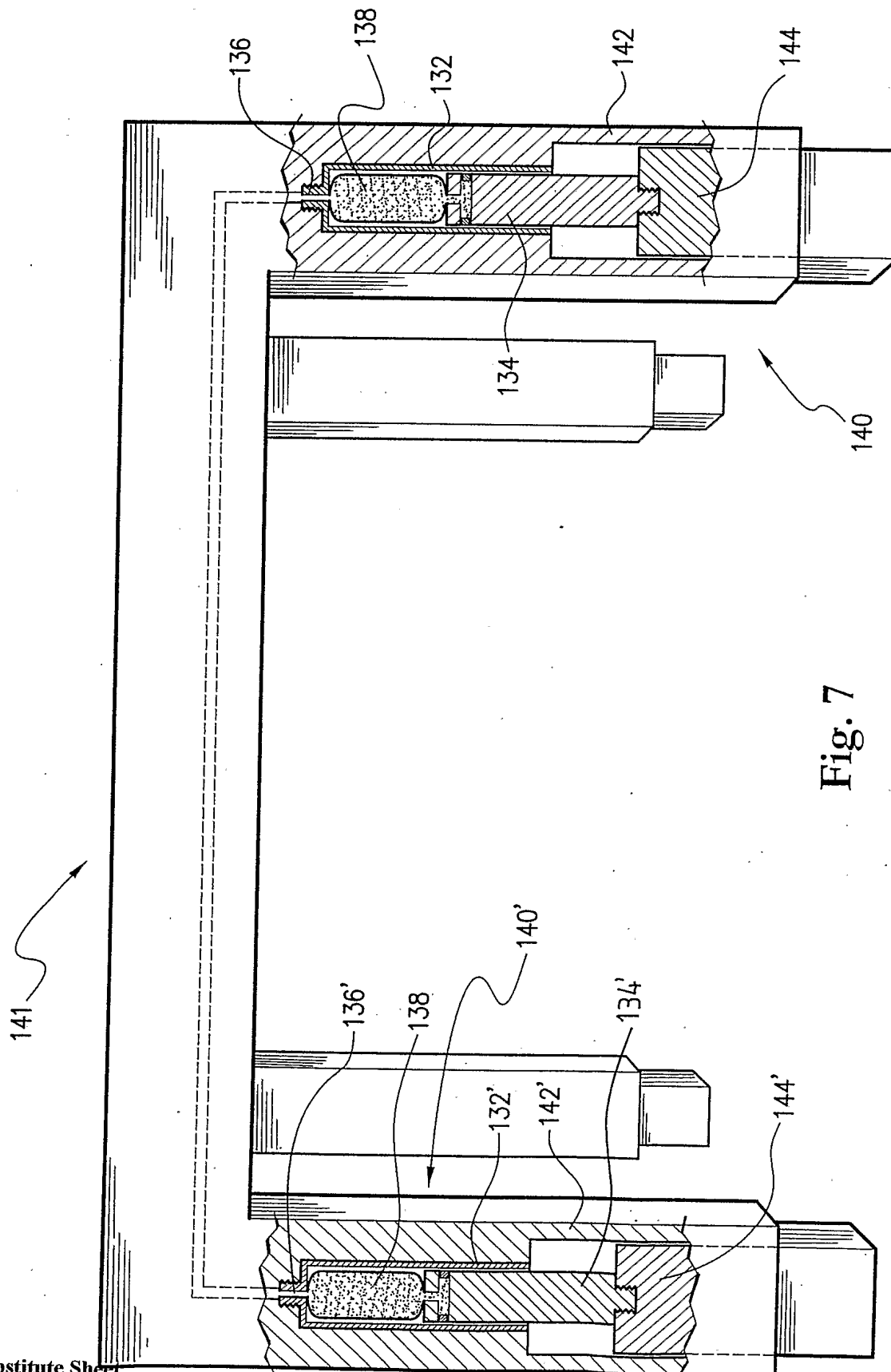


Fig. 7

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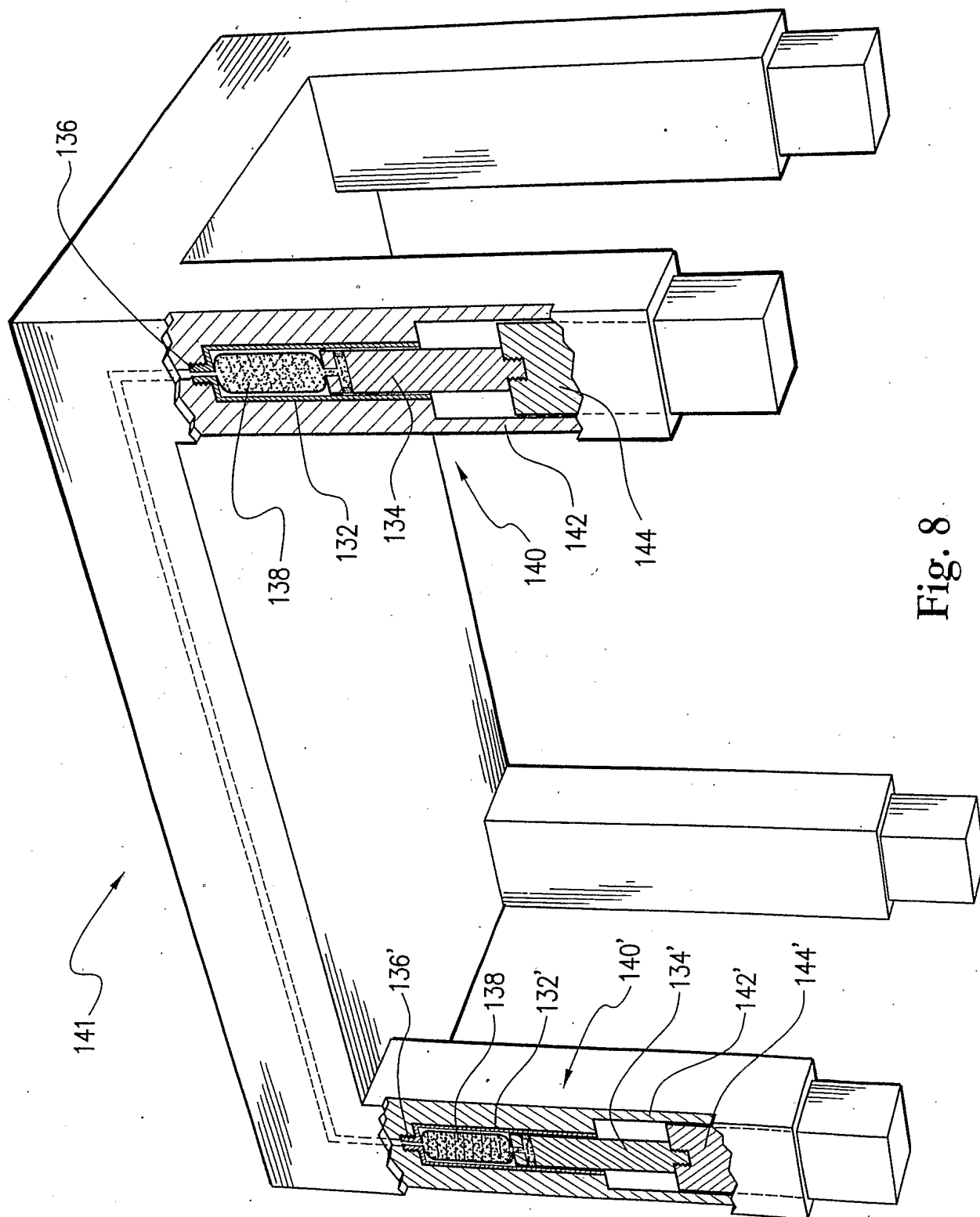


Fig. 8

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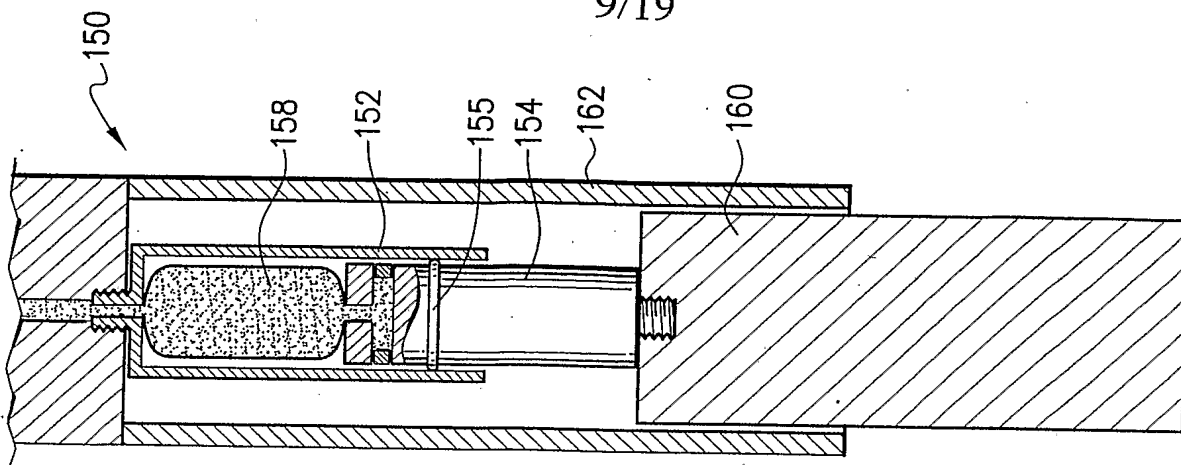


Fig. 10B

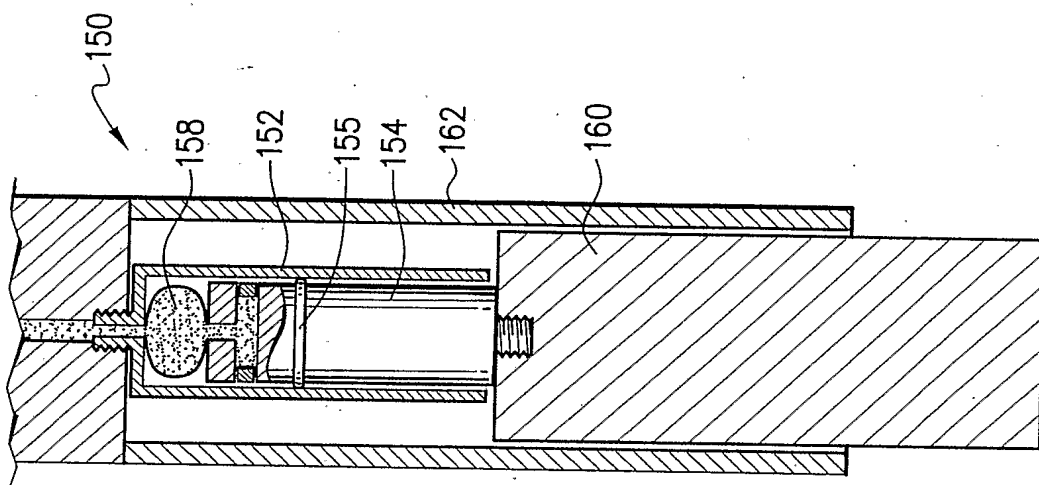


Fig. 10A

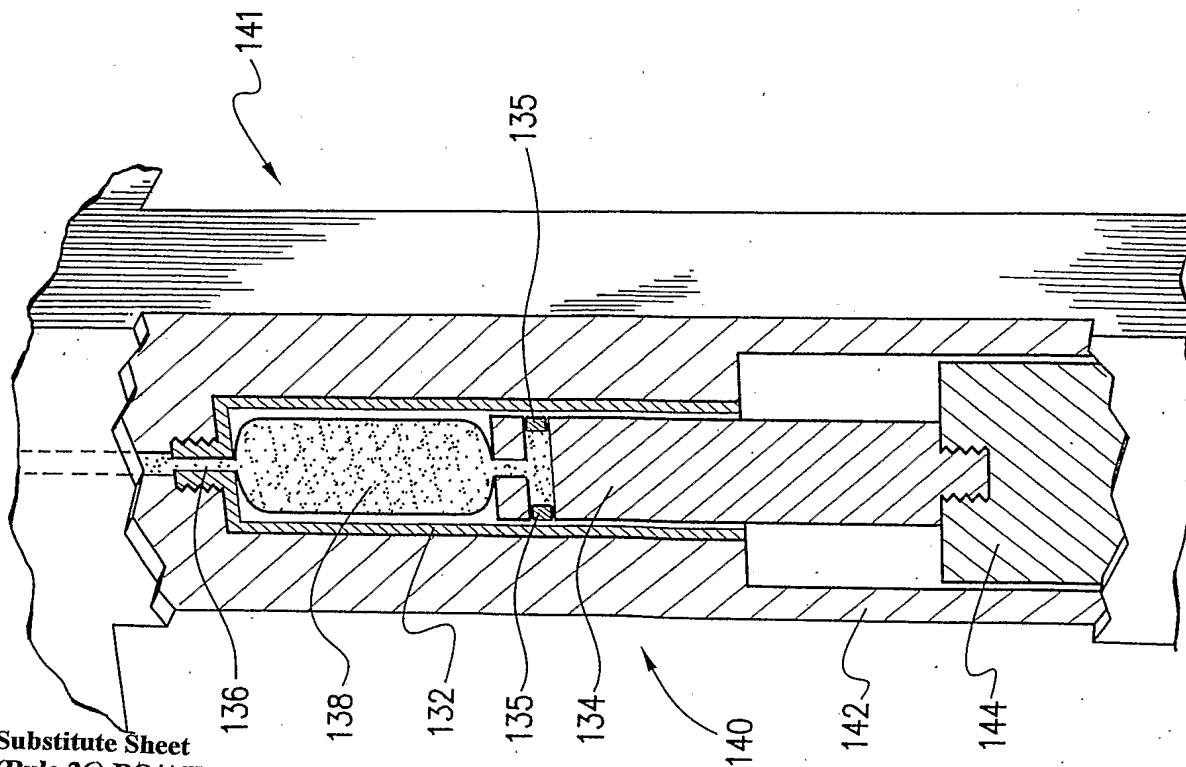


Fig. 9

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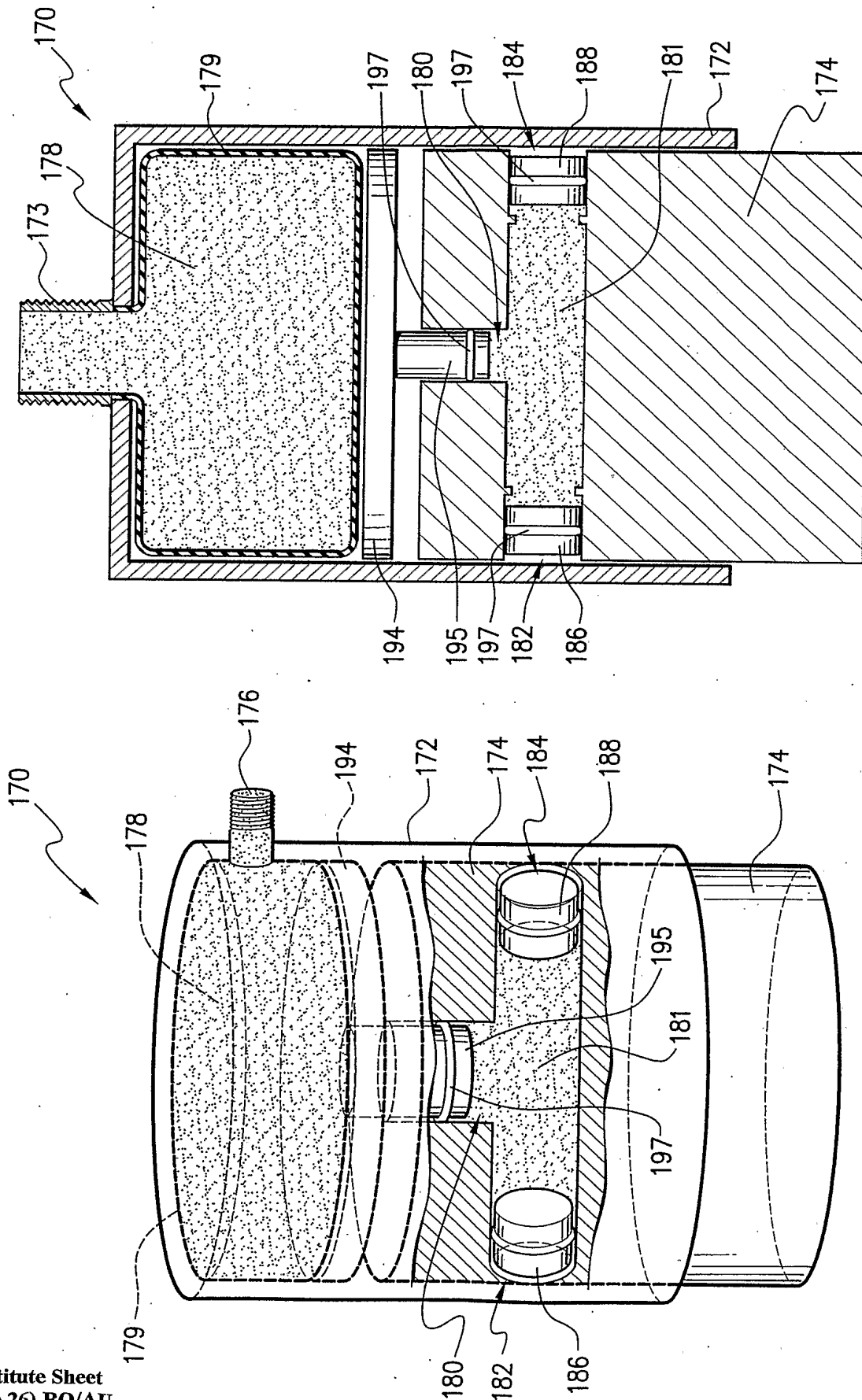


Fig. 12

Fig. 11

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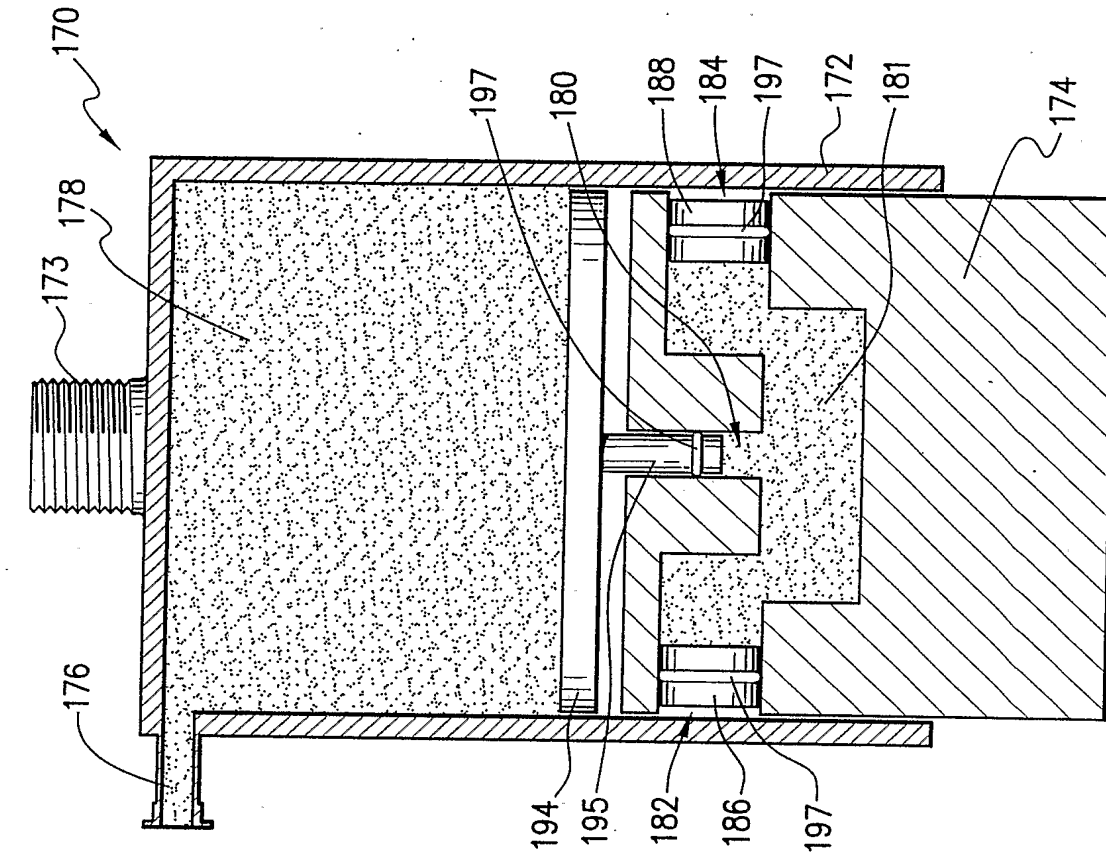
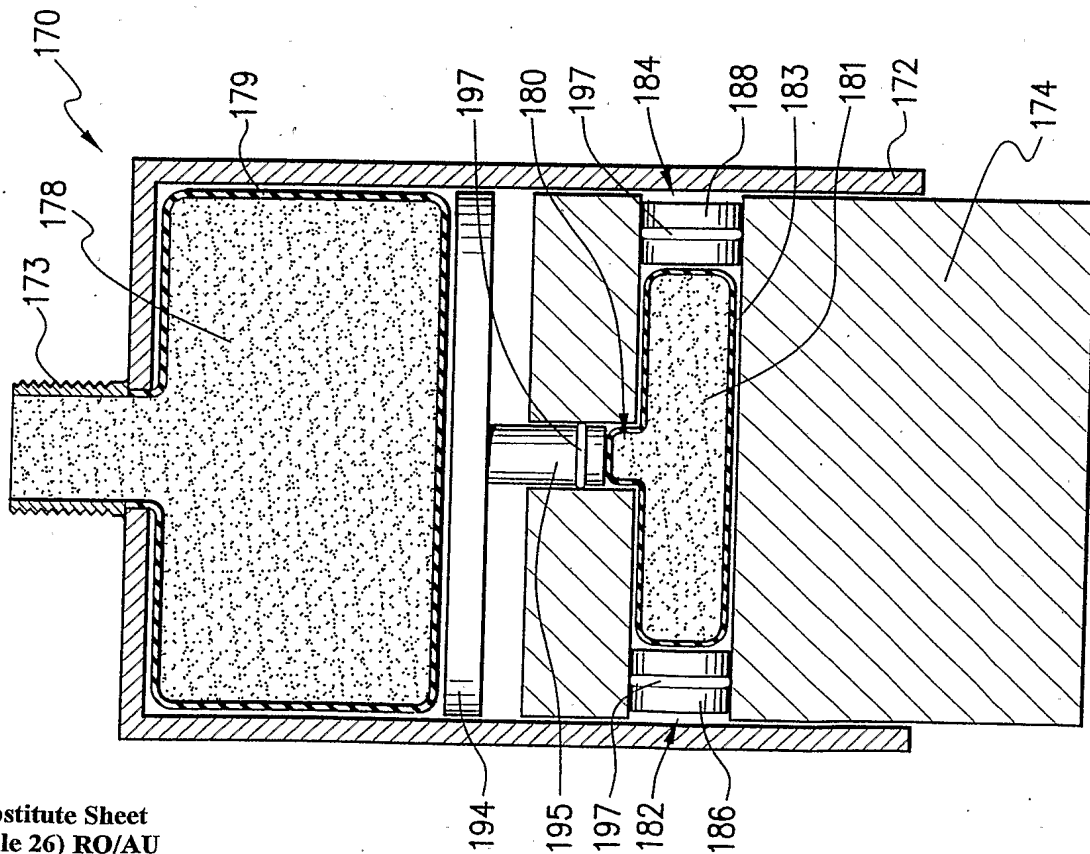


Fig. 14



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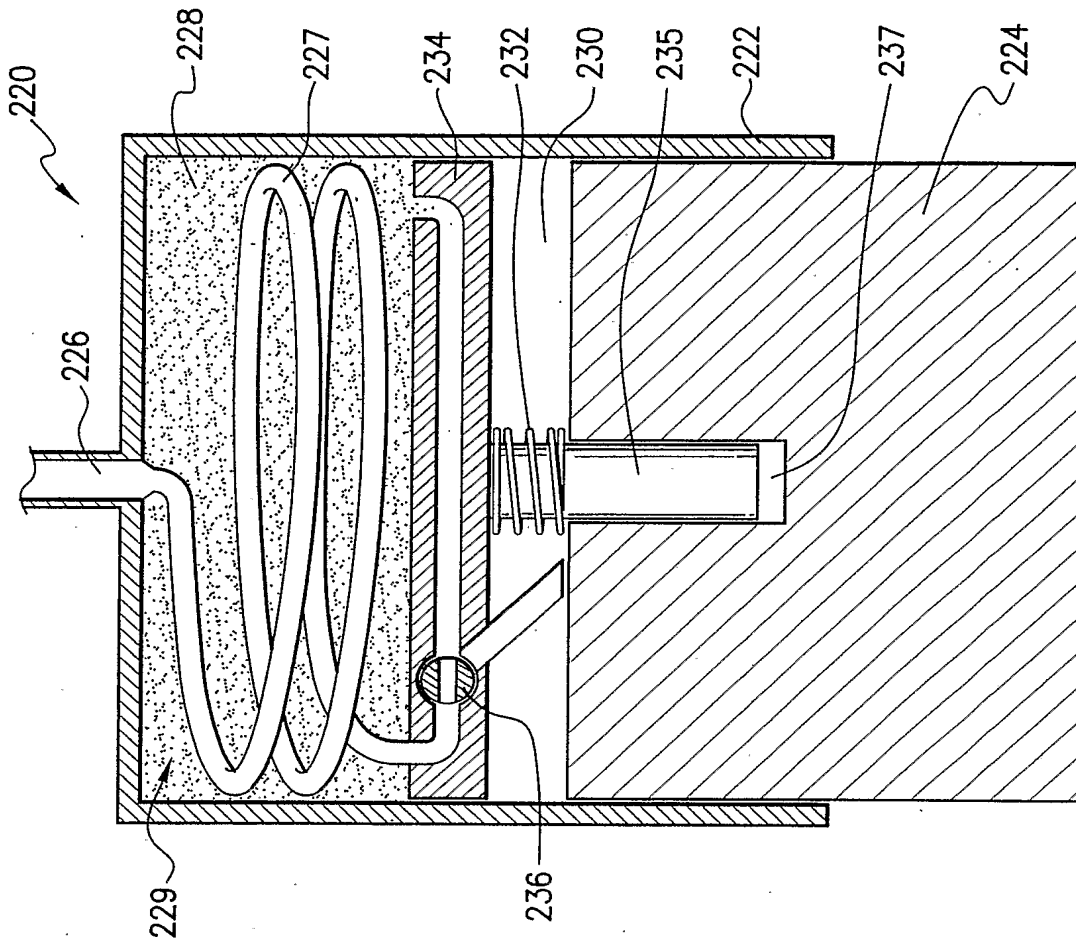


Fig. 16

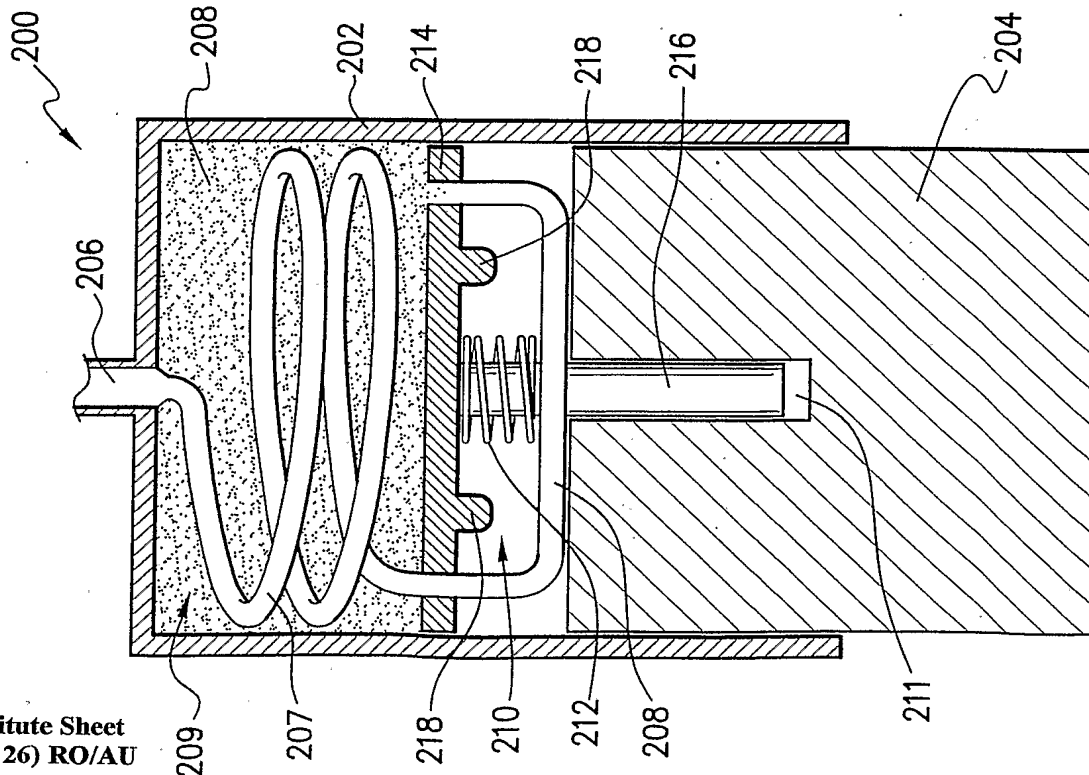


Fig. 15

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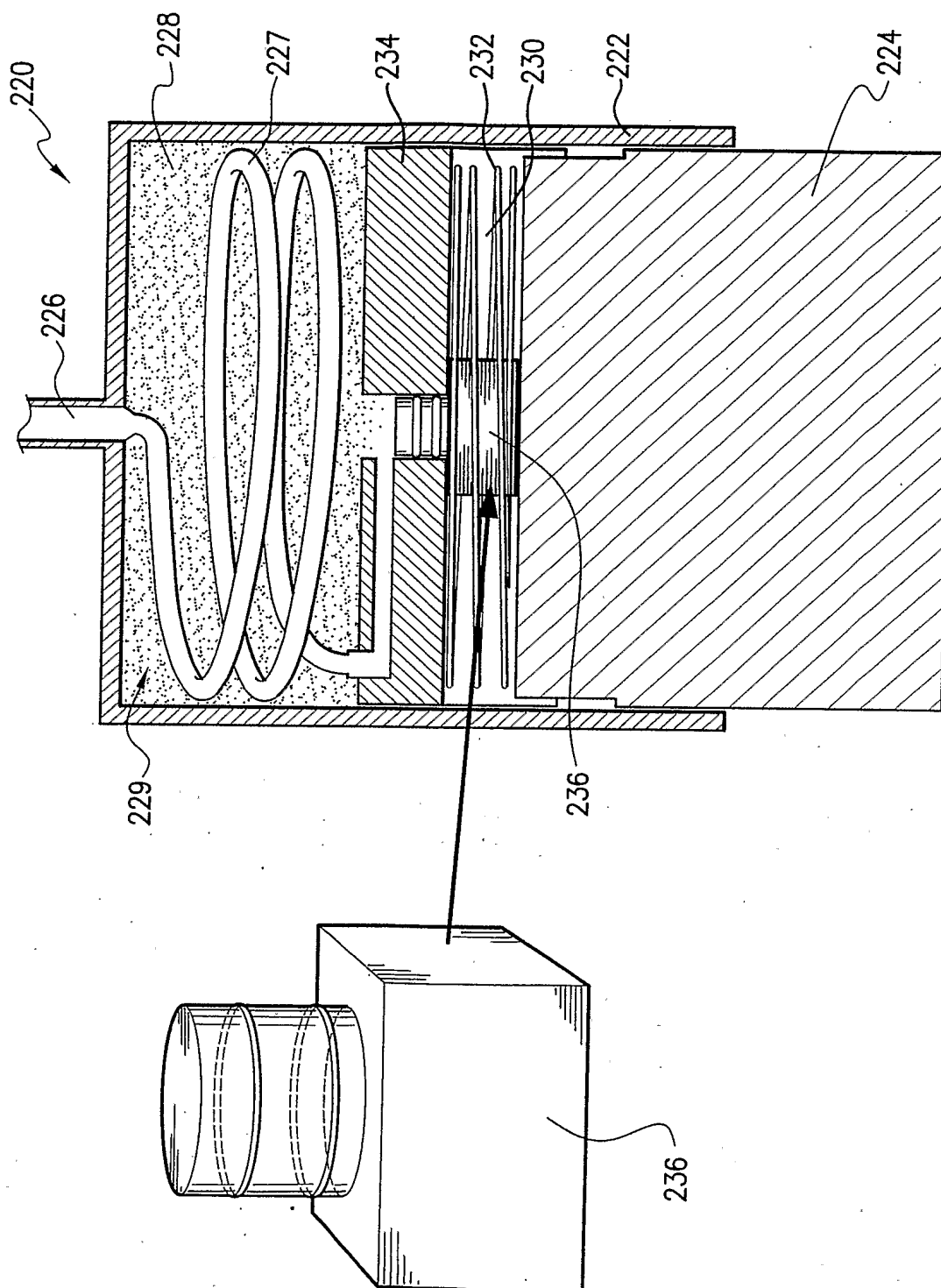


Fig. 17

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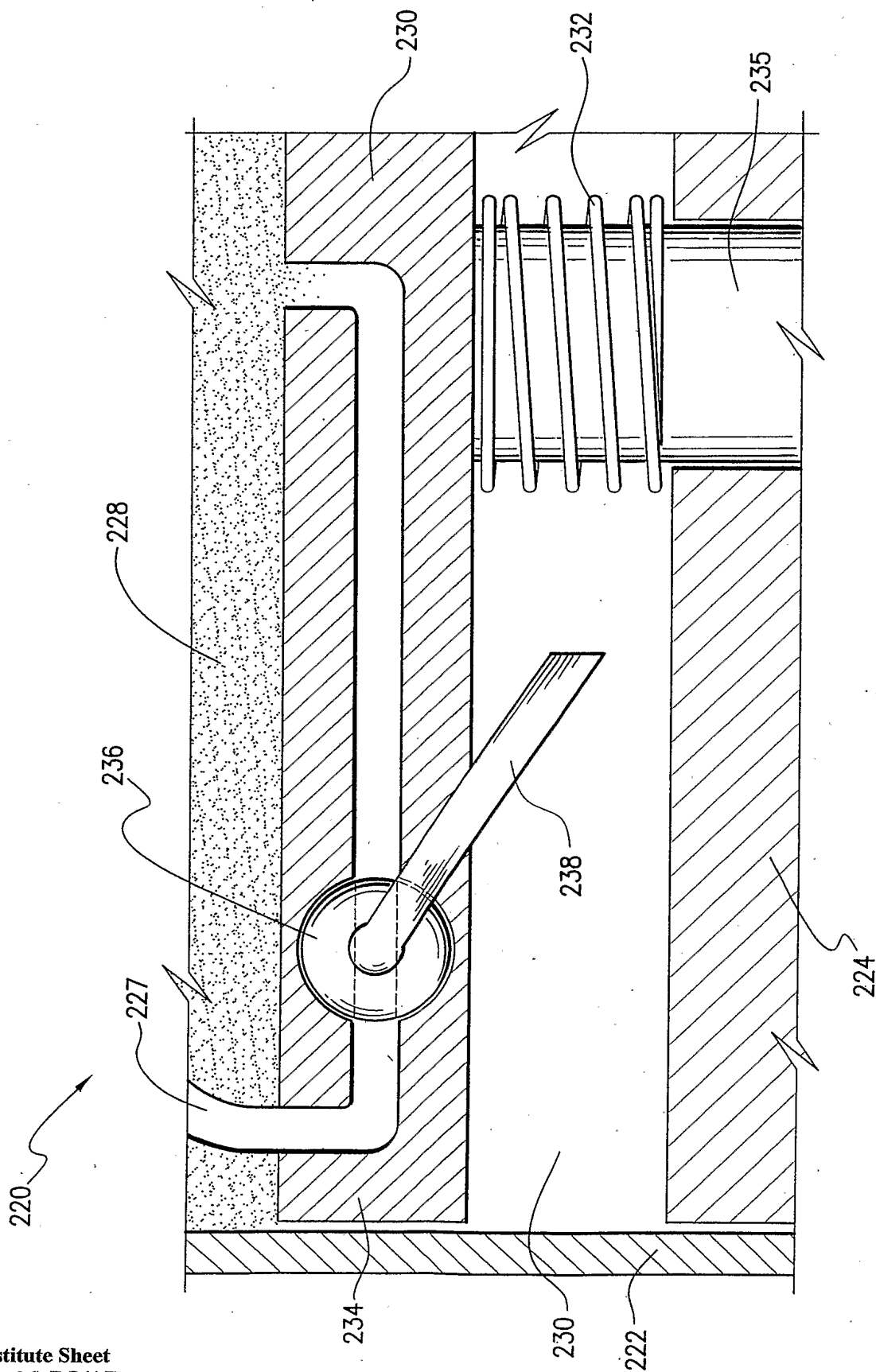


Fig. 18

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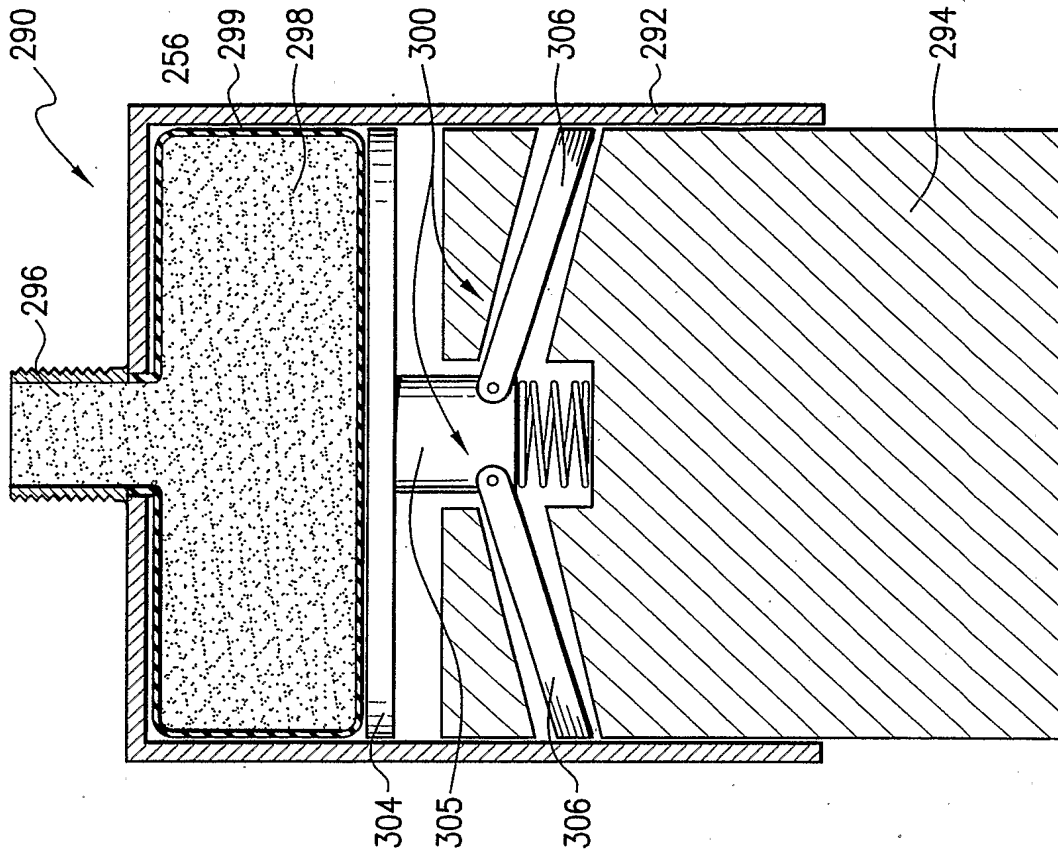


Fig. 20

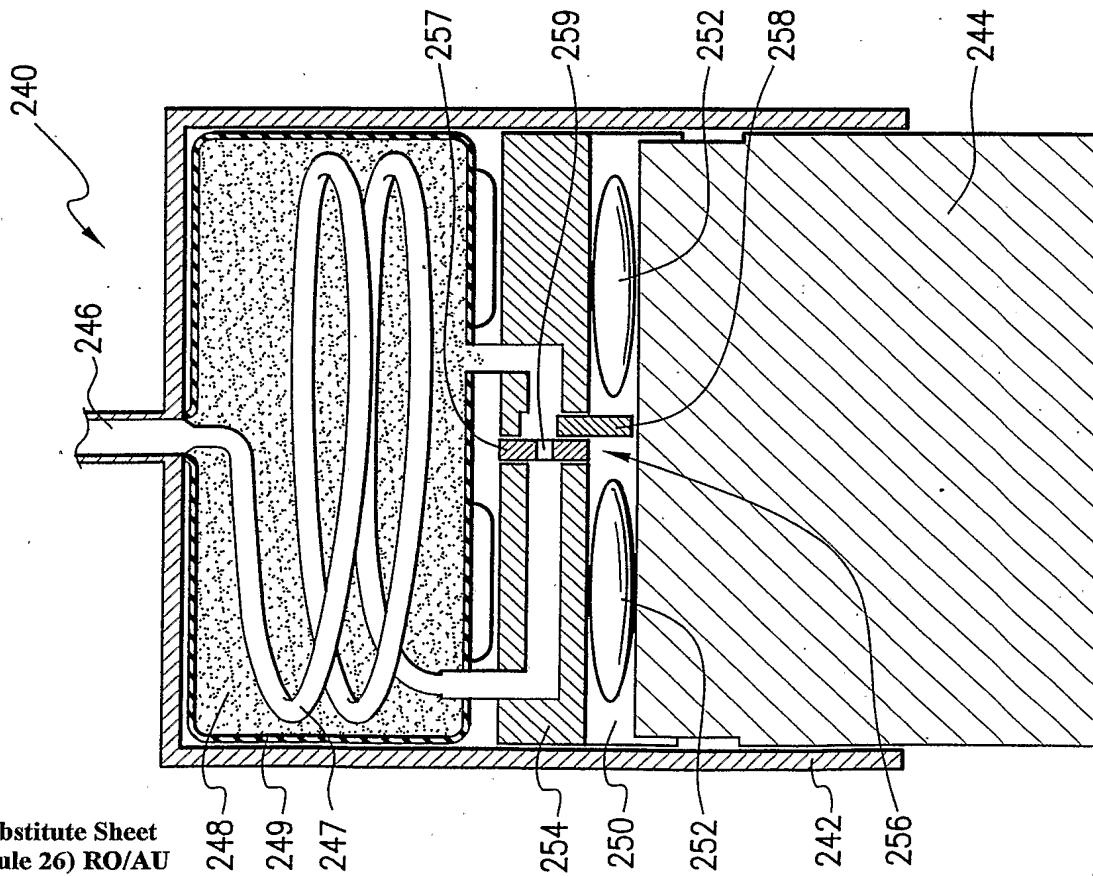


Fig. 19

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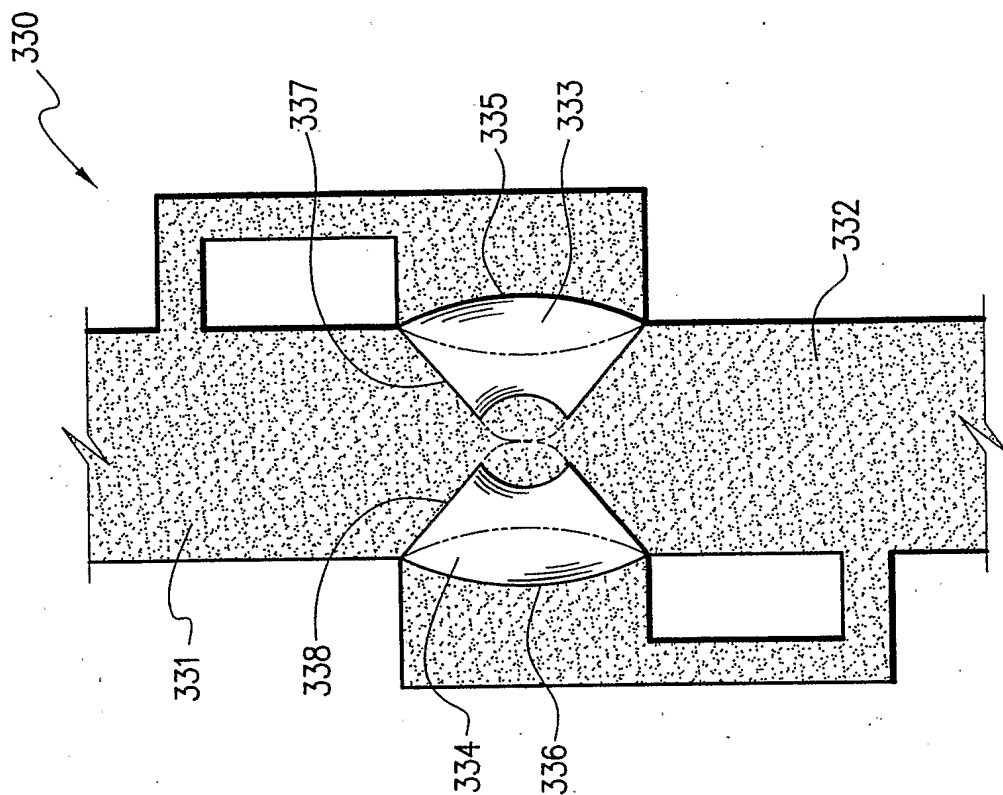


Fig. 22

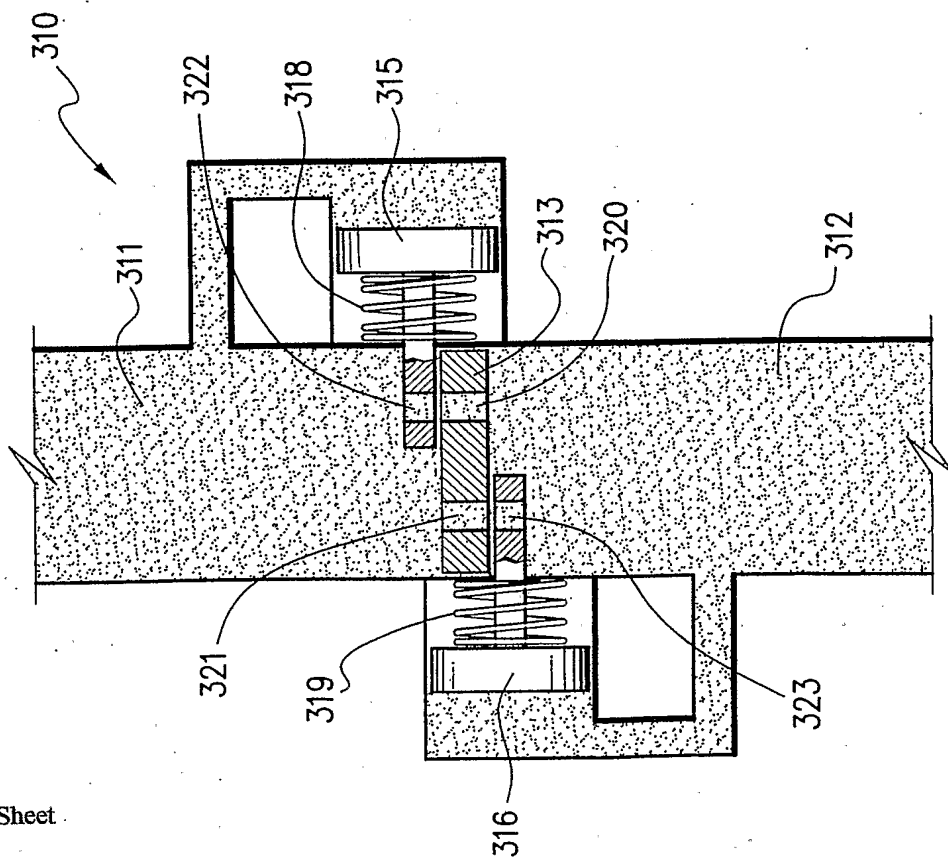


Fig. 21

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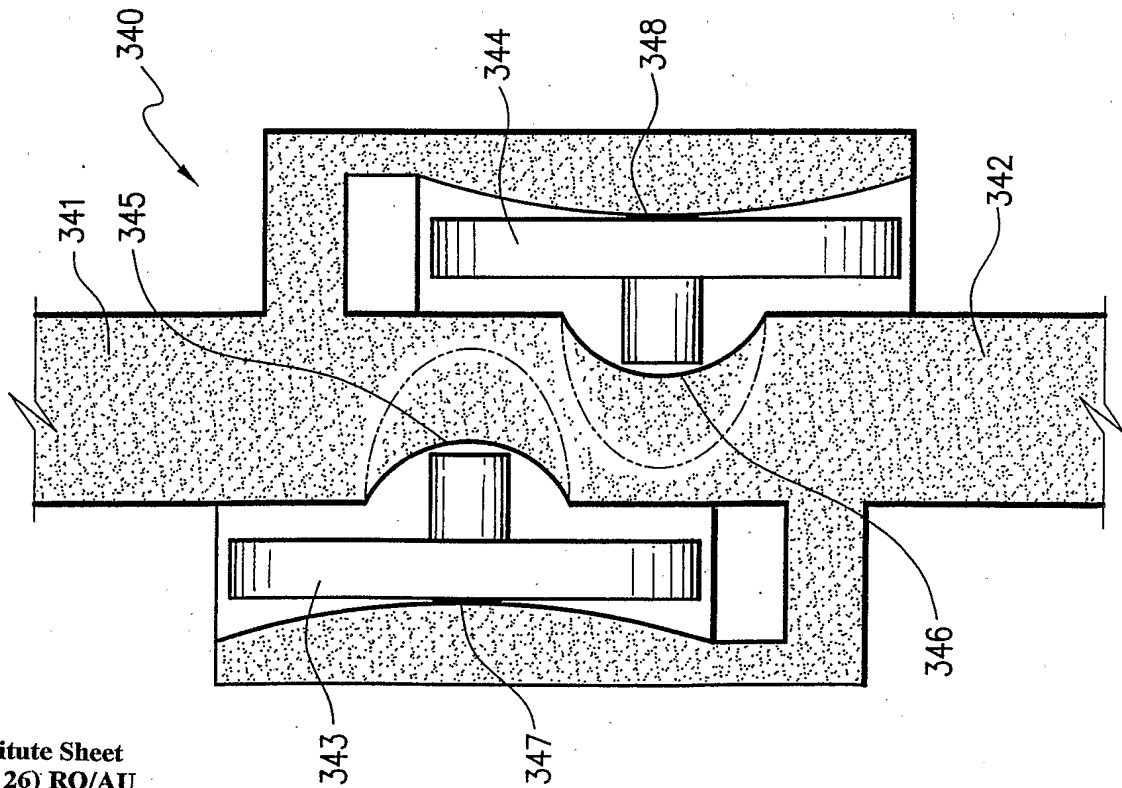


Fig. 23

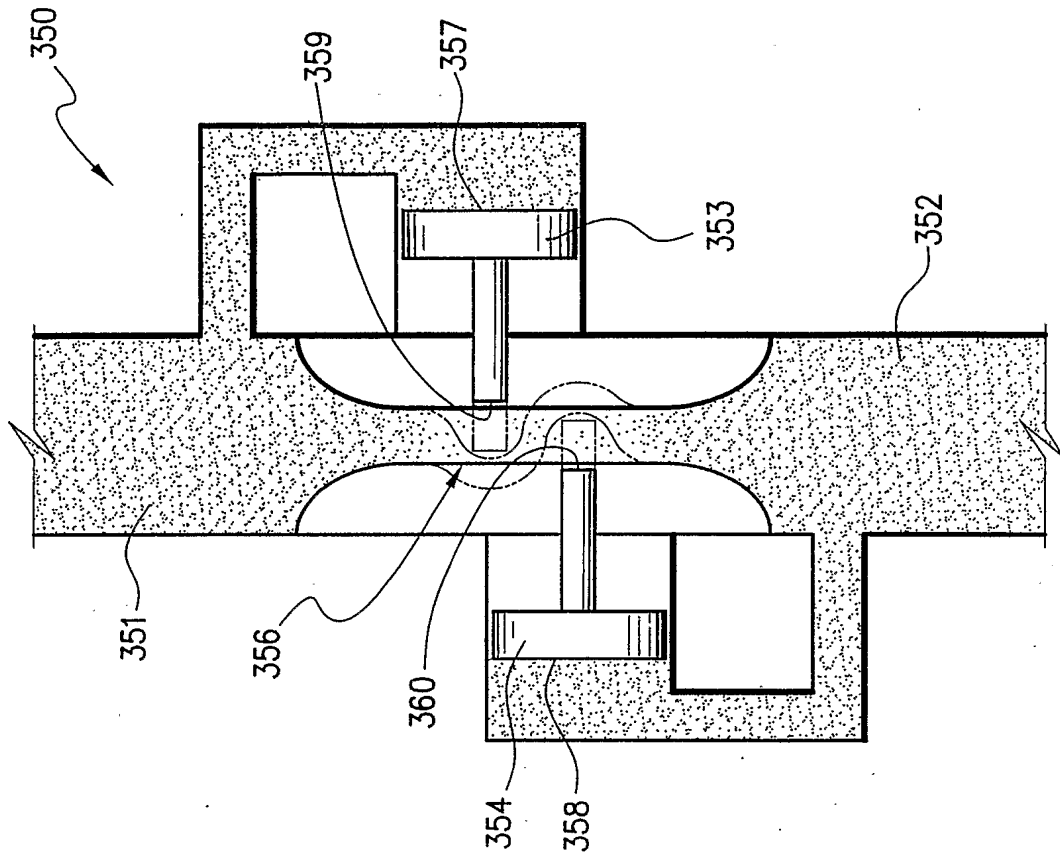


Fig. 24

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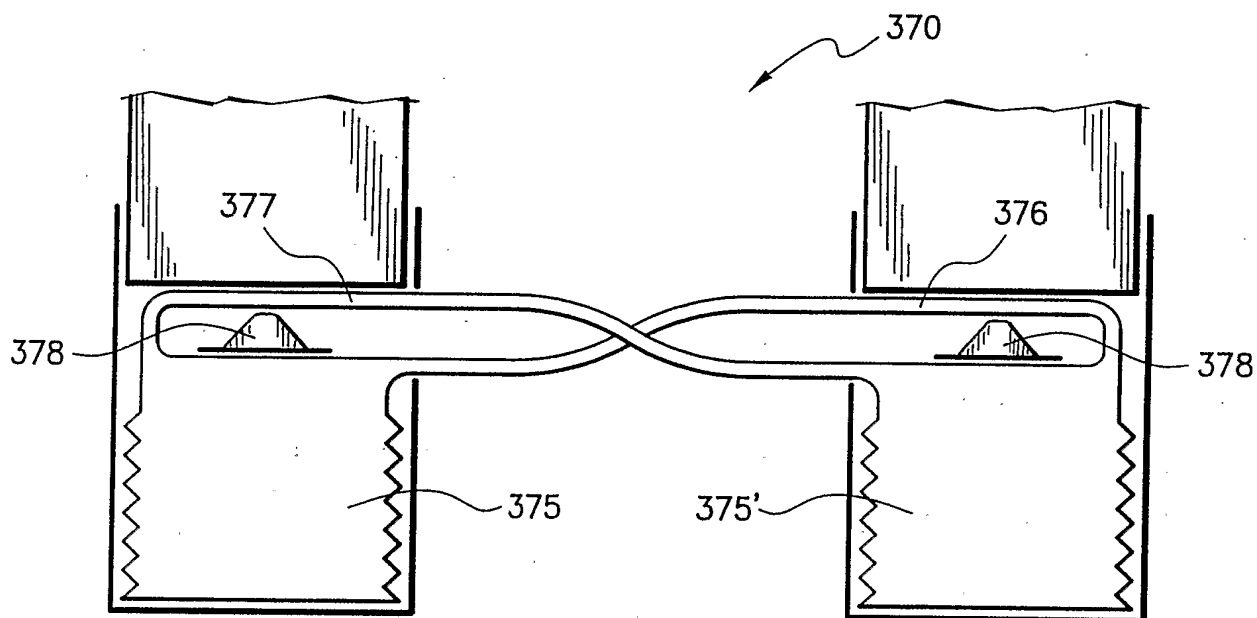


Fig. 25

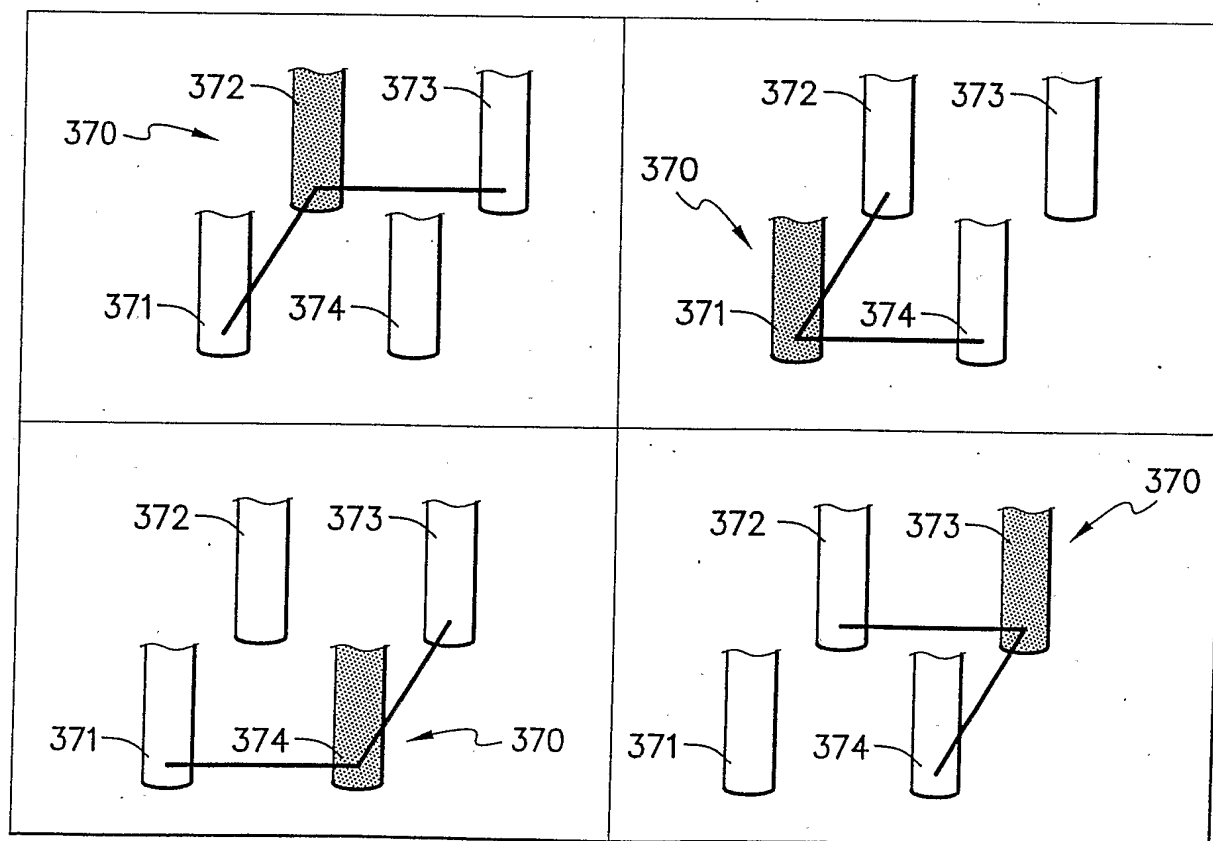


Fig. 26

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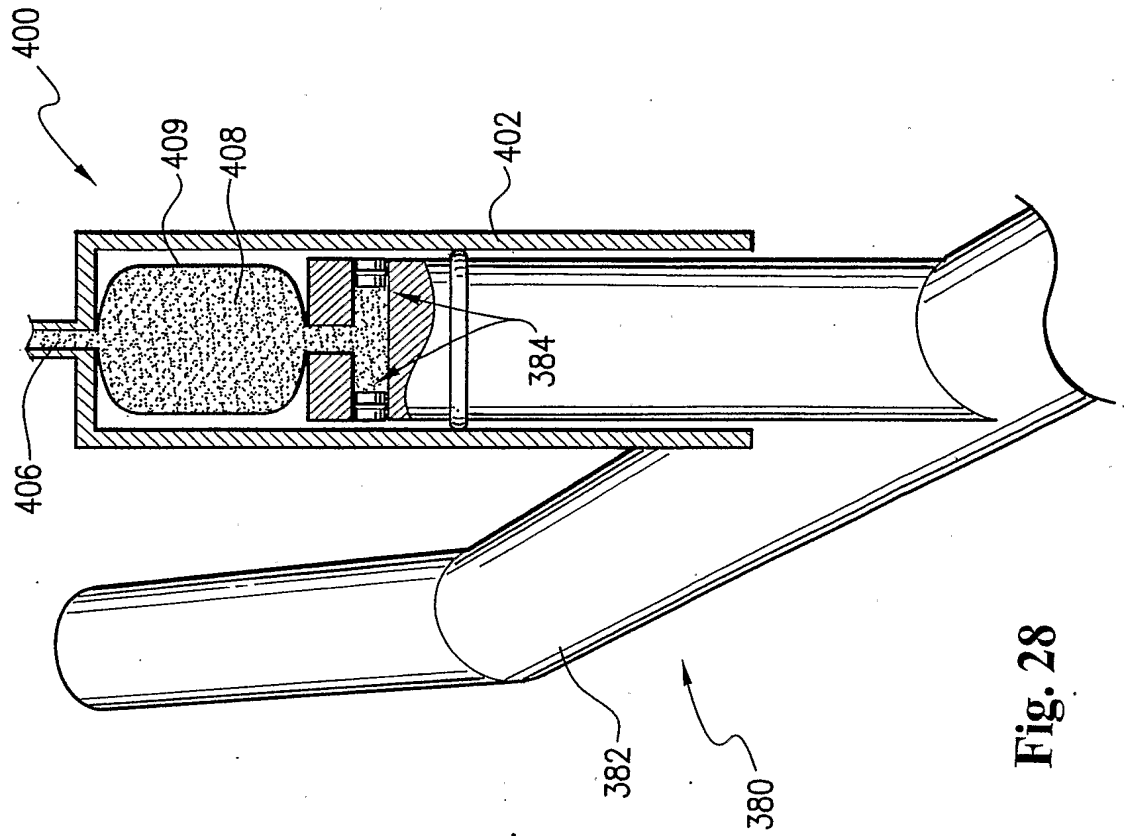


Fig. 28

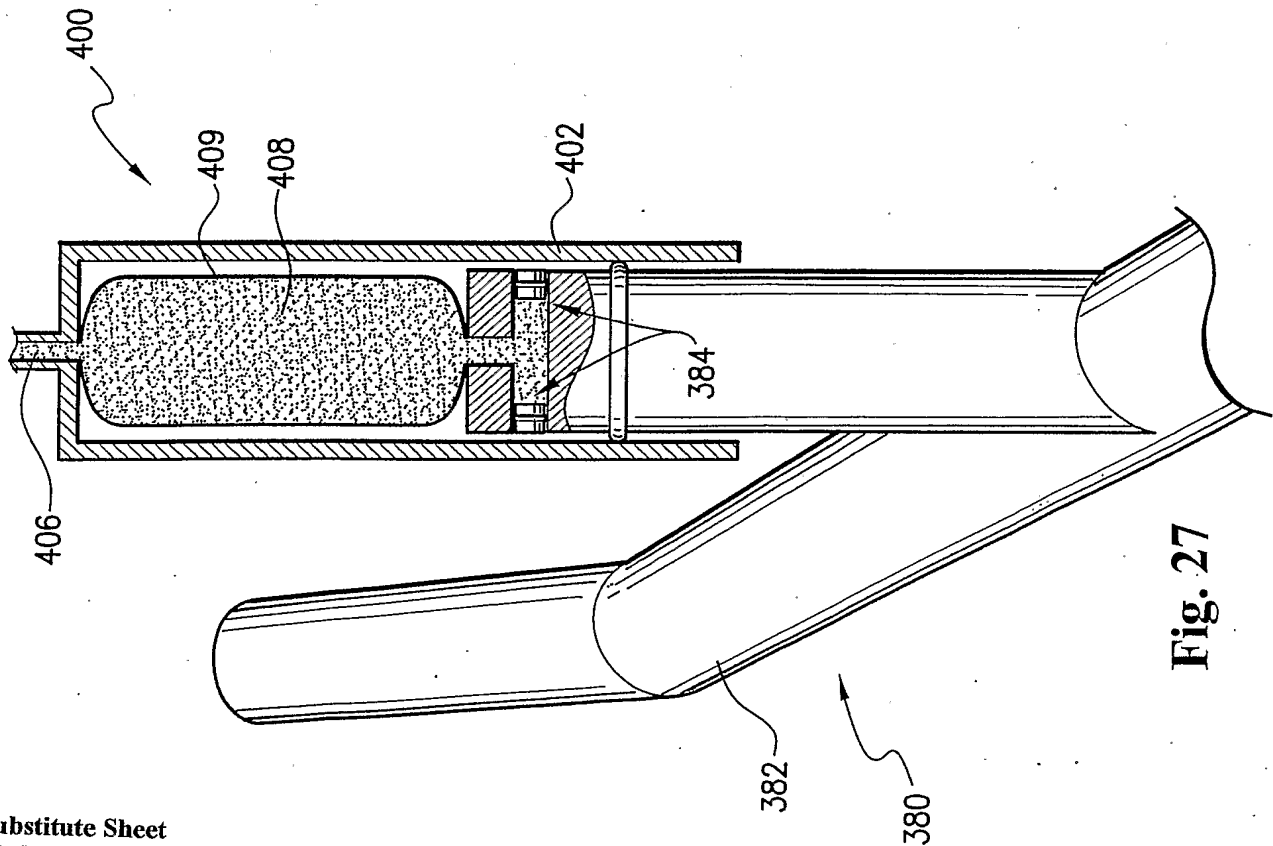


Fig. 27